



## CITY OF LODI COUNCIL COMMUNICATION

AGENDA TITLE: Adopt Resolution Authorizing Purchase of New Pump and Motor for City Water Well No. 18 from Layne Christensen Company, of Woodland (\$27,142)

MEETING DATE: September 3, 2008

PREPARED BY: Public Works Director

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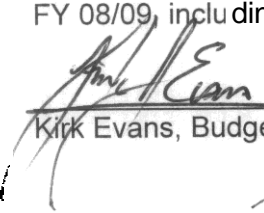
RECOMMENDED ACTION: Adopt resolution authorizing the purchase of a new pump and motor for City Water Well No. 18 from Layne Christensen Company of Woodland, CA, in the amount of \$27,142.

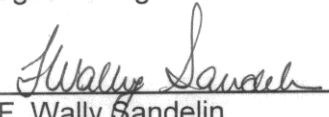
BACKGROUND INFORMATION: The submersible 150 HP motor at City Water Well No. 18 failed on February 14, 2008, after being rebuilt in 2001. The original pump motor was installed in 1975 and failed in 2001 after 26 years of service. The typical service life of a pump motor is 20 years. The company that rebuilt the motor for Layne Christensen has not stood behind the work, blaming the City's electrical system or control panels for the motor's continued failure. Layne Christensen has worked closely with the City to ensure that the City's electrical system and control panels are working properly. Therefore, Layne Christensen is backing the work and has made a generous offer to pay half the cost of a new pump and motor plus installation (attached). Rather than attempting to repair the existing motor a third time, it is proposed a new pump and motor be installed at a cost of \$22,142. There is also an additional cost of \$5,000 for adding a column to position the pump and motor to a lower depth (to extend the life of the well) and for splicing in the new cable to the City's electrical control panel, for a total cost of \$27,142.

The pump and motor for Well 18 is covered under the City's insurance for major equipment through the California Joint Powers Risk Management Authority (CJPRMA). The failure of the motor was reported to CJPRMA, and they were given an estimate for the cost of repairs or replacement. The City has received an insurance settlement in the amount of \$36,193.01 which has been deposited into the Water Operating Fund. A portion of this settlement has already been spent to pull the pump and motor.

FISCAL IMPACT: \$27,142, which is expected to reduce the high maintenance costs experienced at the well.

FUNDING AVAILABLE: Repair funds are budgeted in the Water Operating Fund (180453) for FY 08/09, including the insurance settlement.

  
Kirk Evans, Budget Manager

  
F. Wally Sandelin  
Public Works Director

FWS/CS/FB/dsg

Attachment

cc: Charles Swimley, Water Services Manager

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APPROVED: 

Blair King, City Manager

# **Layne Christensen Company**

P.O. Box 1326, 275 County Road 98 • Woodland, CA 95695-8925 • Phone: (530) 662-2825 • Fax: (530) 662-2896

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July 25, 2008

City of Lodi  
Attention: Frank Beeler  
1331 S. Ham Lane  
Lodi California 95242

RECEIVED  
JUL 28 2008  
CITY OF LODI  
MUNICIPAL SERVICE CENTER

Dear Mr. Beeler:

This letter is to confirm our conversation concerning your Well Pump #18 located at Century Blvd. and Church Street in Lodi.

I do not *think* there is a need to review all the problems we have had with this 150 HP BJ submersible pump other than the most recent episode where it operated for about 750 hours before failing.

As we have discussed, Layne has utilized the BJ factory, SunStar Electric and Alstra Industries over the last several years for BJ motor repairs with mostly unsatisfactory results.

This is the third time this motor has been back to SunStar and they are refusing to warrantee the motor because they are claiming the failure is caused by external vibration or faulty/inadequate controls. We have disassembled the bowl assembly each time and checked the shaft, bearings and impellers for straightness, alignment, etc. and never found any problems. We also know you have good controls/protection and we respect your electricians as being very competent.

We believe the problem is in the motor but are at an impasse with the supplier. This is the sort of problem that everyone has a point and is near impossible to sort out all the issues. We know this has been a pain for the city and appreciate your understanding and patience.

We have a very low confidence that rebuilding the motor once again will be successful and think it would be best to look at other options.

We propose that an all new motor/bowl assembly be installed that designed for the same operating conditions as the existing pump. The city would pay for 50% of the cost. Other than getting a pump that will operate the advantage to the city would be an all new motor/pump rather than a 20+ year old rebuilt unit.



The proposed pump would utilize a **150 HP, 1,800 RPM, 460 volt, 3 phase, 12"**Hitachi submersible motor and a **4 stage, 14RJMC** Christensen bowl assembly. The motor and bowl data information are enclosed.

The total cost is **\$44,284.00** plus California taxes. The cities cost would be **\$22,142.00** plus California taxes on materials.

Another option would be a **3,600 RPM** pump/motor of the same design which cost **\$24,428.00**, or **\$12,214.00** to the city. The 2 pole motor is .5% less efficient than the 4 pole and in general, 2 pole pumps have a shorter service life than the slower speed units.

Note that the existing submersible cable should be inspected and may also need to be replaced if in poor condition.

I hope you find this proposal equitable, if you have any questions call me at **530-662-2825** or **916-997-7993**.

Sincerely,



Richard Eberlein  
Enclosures



# PUMP DATA SHEET Submersible 60 Hz



**Christensen Pumps**  
A division of  
Layne Christensen Company

Company: LAYNE CHRISTENSEN

Customer: CITY of LODI

Name: WELL #18; 150 HP SUBMERSABLE PUMP

Date: 07/25/08

Order No:

## Pump:

Size: 14RJMC (4 stages)

Type: Submersible  
Synch speed: 1800rpm

Curve: E6614RGPC3

Specific Speeds: Ns: 2990

Pump Notes for Standard Sizes:  
Discharge Sizes-8", 10", 12"

Vertical Turbine: Bowl size: 13.63 in  
Max lateral: 1 in  
Thrust K factor: 13lb/ft

## Search Criteria:

Flow: 1750 US gpm

Head: 280 ft

## Fluid:

Water  
Density: 62.25 lb/ft<sup>3</sup>  
Viscosity: 1105 cP  
NPSHa: --- ft

Temperature: 60 °F  
Vapor pressure: 0.2563 psi a  
Atm pressure: 14.7 psi a

## Motor:

Standard: NEMA

Size: 150 hp  
Speed: 1800

## Pump Limits for Standard Construction:

Temperature: 120 °F  
Sphere size: 0.98 in

Pressure: 340 psi g

Sizing criteria: Max Power on Design Curve

### --- Data Point ---

Flow: 1750 US gpm

Head: 280 ft

Eff: 84.1%

Power: 147 hp

NPSHr: 18.7 ft

### -- Design Curve --

Shutoff Head: 423 ft

Shutoff dP: 183 psi

Min Flow: --- US gpm

BEP: 84.2% eff

@ 1820 US gpm

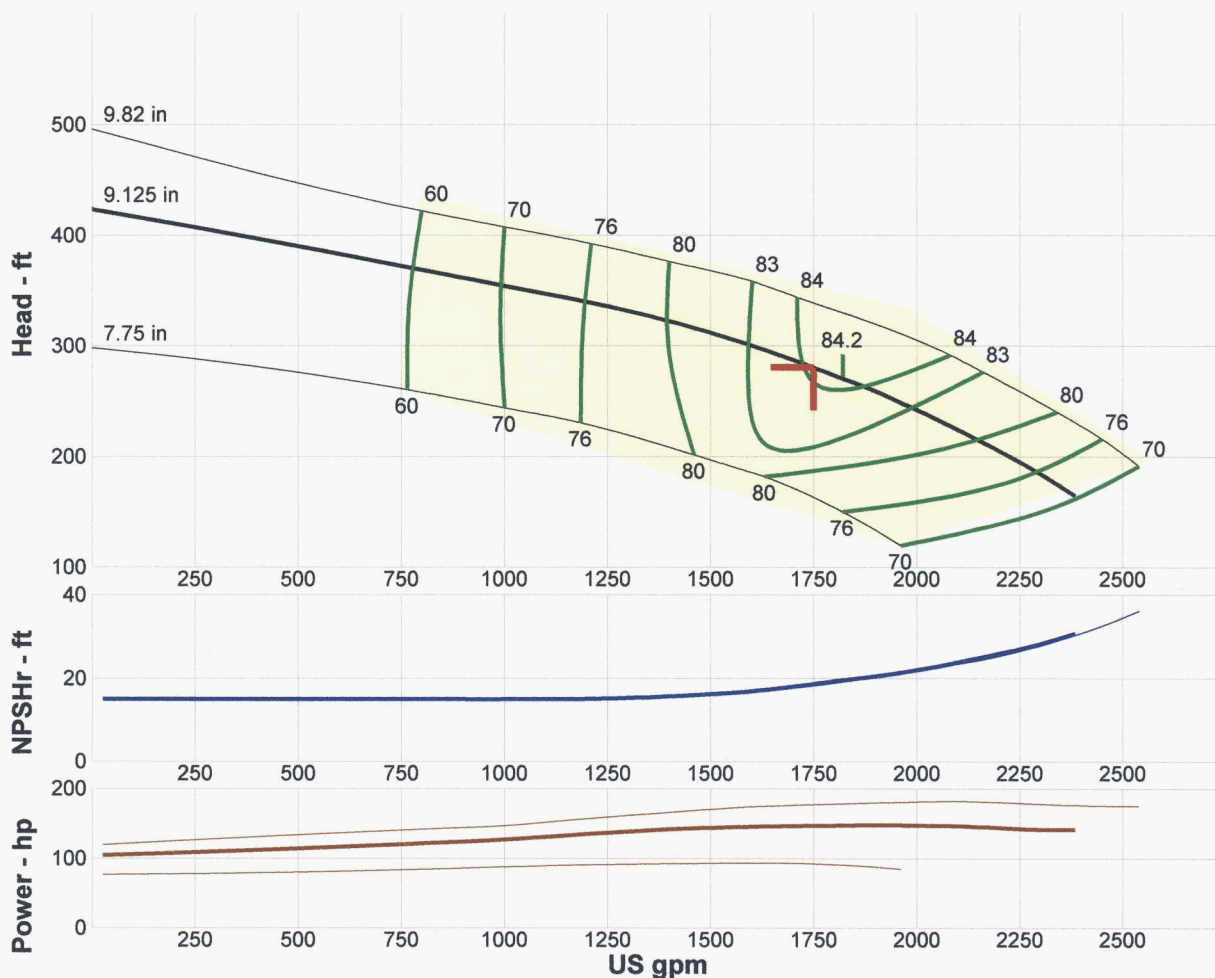
NOL Pwr: 148 hp

@ 1870 US gpm

### -- Max Curve --

Max Pwr: 182 hp

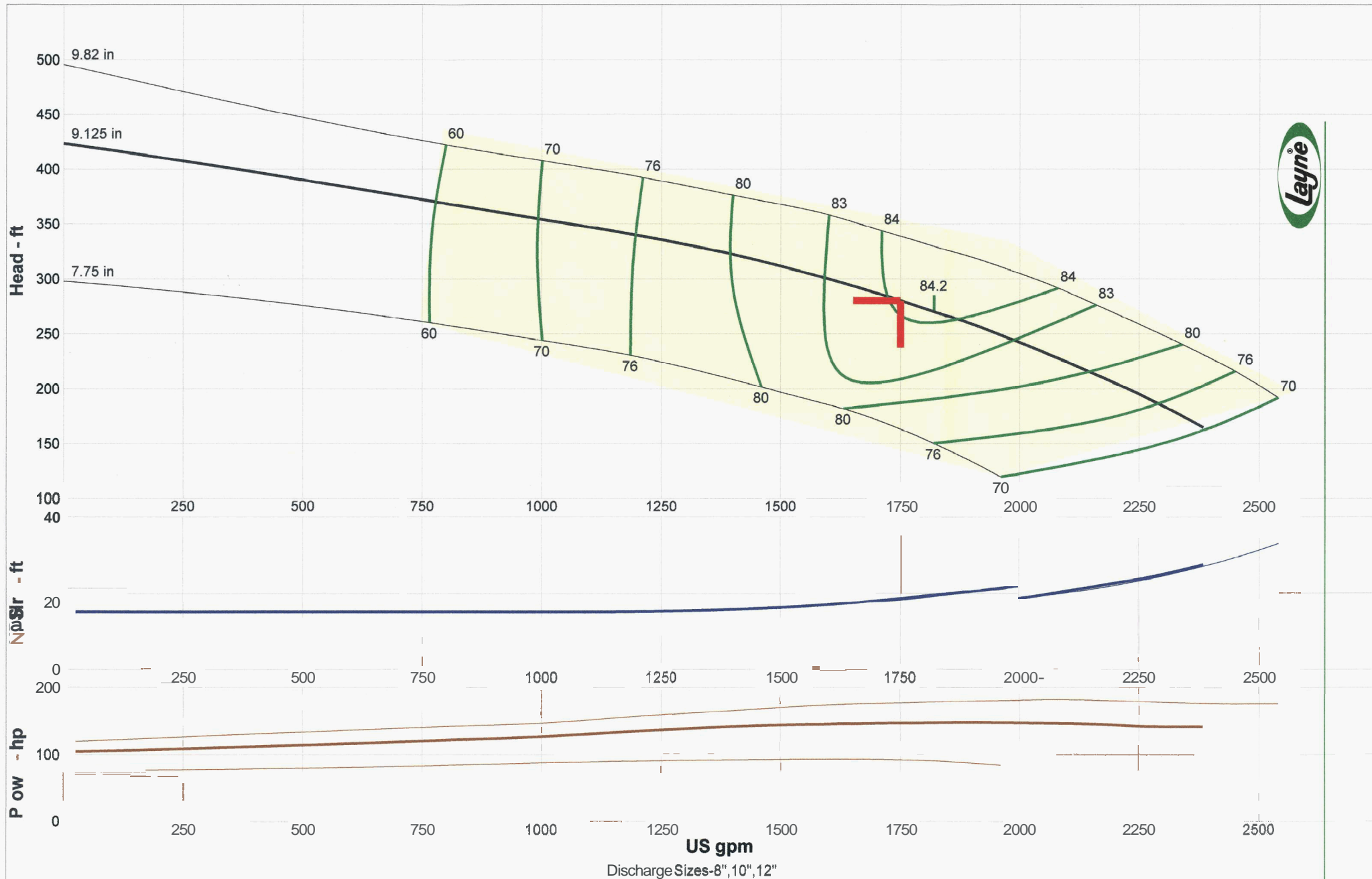
@ 2081 US gpm



## Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
2100	1770	224	80.9	146	24
1750	1770	280	84.1	147	18.7
1400	1770	322	80.1	142	15.7
1050	1770	350	71.7	129	15
700	1770	376	54.1	119	15





Company: LAYNECHRISTENSEN  
 Name: WELL #18; 150 HP SUBMERSABLE PUMP  
 7/25/2008

Submersible 60 Hz  
 Catalog: Ch Sub 60HZ, Vers 3.10  
 Submersible - 1800  
 Design Point: 1750 US gpm, 280 ft

Size: 14RJMC 4 stage  
 Speed: 1770 rpm  
 Dia: 9.125 in  
 Curve: E6614RGPC3



**Christensen Pumps**  
 A division of  
 Layne Christensen Company



# HITACHI

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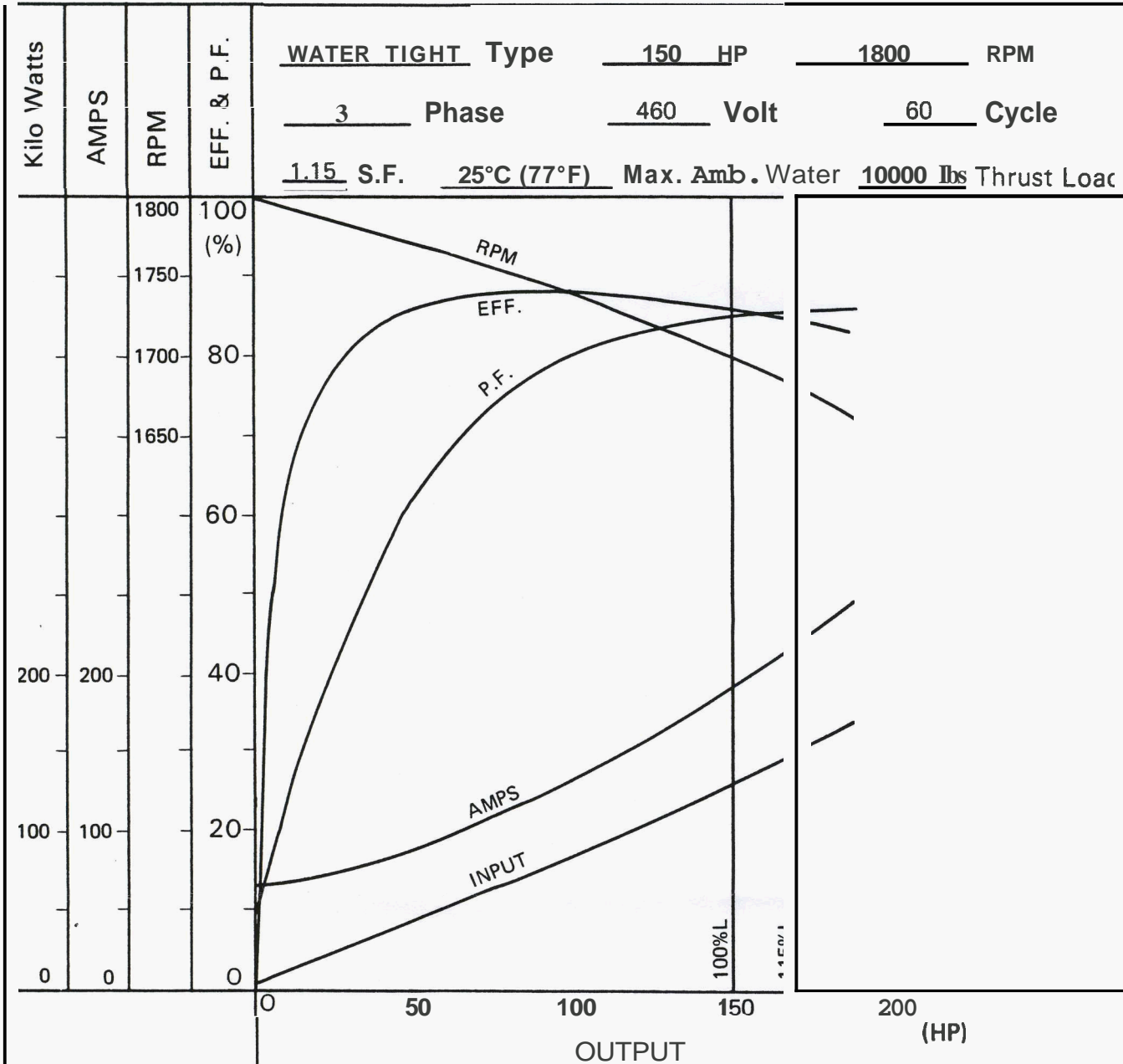
## 12" SUBMERSIBLE MOTOR

### PERFORMANCE CHARACTERISTICS

Date : 12/1/82  
Supersedes : New

150HP

1800 RPM



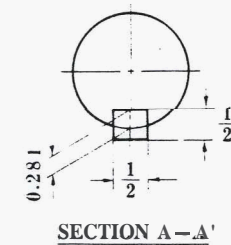
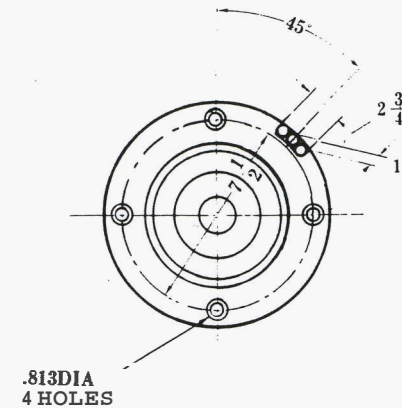
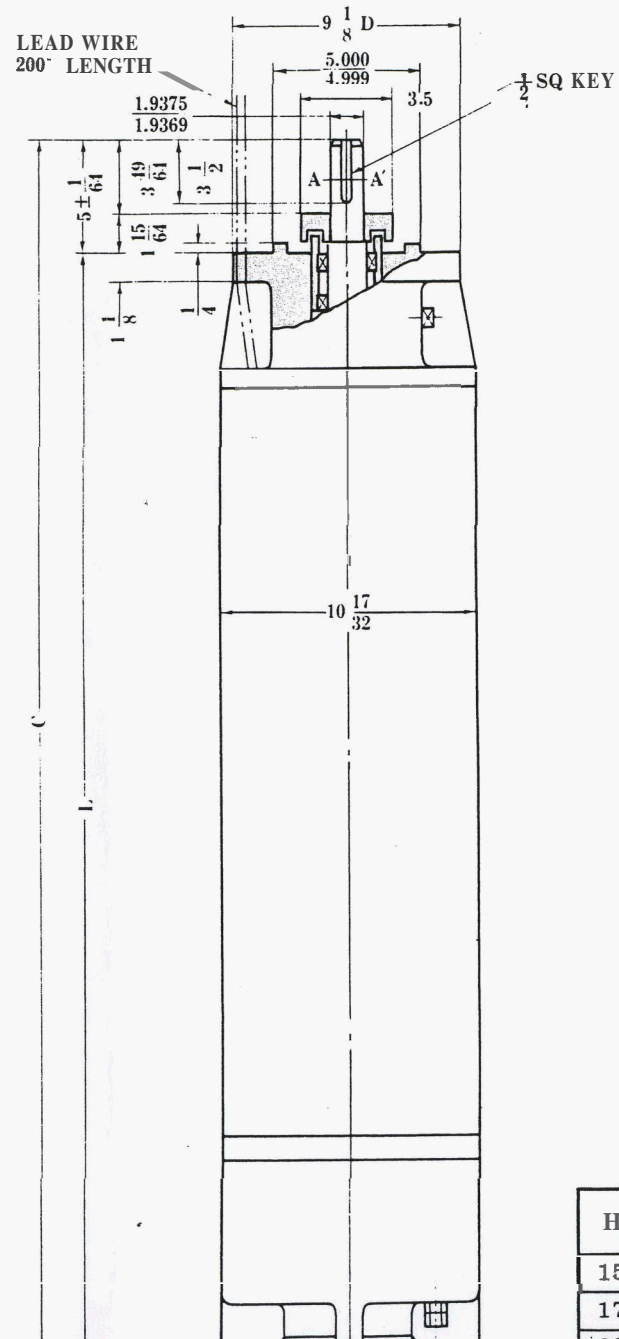
LOAD (HP)	No load (-)	25% (37.5)	50% (75)	75% (112.5)	100% (150)	115% (172.5)	125% (187.5)
AMPS	67.1	80.4	109	146	191	223	244
EFF.	0	83.3	87.8	87.7	86.1	84.5	83.3
P.F.	11.5	52.4	73.5	82.1	85.4	86.1	86.2
RPM	1800	1779	1756	1730	1700	1677	1663
WATTS	6200	33580	63720	95700	130000	150000	168000

Full Load Torque 463 Foot Pounds  
Break Down Torque 801 Foot Pounds  
Locked Rotor Torque 667 Foot Pounds  
Locked Rotor Current 842 Amperes  
KVA Code D

\* Additional input watts due to thrust load — see page C6.  
Quick trip O.L. + short circuit protection required in each phase.

Power factor correction capacitor — see page C8.



**4POLE HITACHI SUBMERSIBLE MOTORS**Date : 12/1/82  
Supersedes : NEW**12" MOTOR**

Dimensions in inches

HP	PHASE	VOLT	Hz	THRUST (LBS)		L
150	3	460	60	10000	61.30	56.30
175	3	460	60	10000	66.02	61.02

# HITACHI SUBMERSIBLE MOTORS (4 POLE)

## PERFORMANCE AND APPLICATION DATA

INCH)	HZ	PHASE	SERVICE FACTOR	WINDING CONNECTION WITH MOTOR LEADS (Ω) at 68°F (20°C)	RATED INPUT		SERVICE FACTOR INPUT		MAX. THRUST LOAD (LBS)	EFFICIENCY(%)			POWER FACTOR(%)			LOCKED ROTOR		OVERLOAD PROTECTION		STD. FUSE SIZE	DUAL ELEMENT FUSE SIZE
					AMPS	WATTS	AMPS	WATTS		F.L.	3/4	1/2	F.L.	3/4	1/2	AMPS	CODE	STARTER SIZE	HEATER CODE (FURNASE AMB. COMP.)		
10" 100 460	60	3	1.15	DELTA 0.214	142	85950	161	100100	10000	86.8	87.0	85.1	75.7	70.1	59.8	552	D	4	K94	450	175
	50	3	1.0	" 0.214	172	88800	—	—	10000	84.0	85.7	85.2	78.3	74.3	64.5	555	C	4	K96	450	175
	50	3	1.0	" 0.214	165	88800	—	—	10000	84.0	84.3	82.2	73.5	67.5	56.3	592	D	4	K96	450	175
" 125 460	60	3	1.15	" 0.173	174	108940	196	126910	10000	85.6	85.9	83.9	78.5	72.9	61.9	552	C	4-1/2	K29	600	200
	50	3	1.0	" 0.173	210	112500	—	—	10000	84.3	84.6	82.6	83.2	77.3	65.6	560	A	4-1/2	K31	600	250
	50	3	1.0	" 0.173	201	112500	—	—	10000	84.3	83.3	80.0	78.1	70.2	57.3	592	B	4-1/2	K31	600	250
12" 150 460	60	3	1.15	" 0.137	191	130000	223	150000	10000	86.1	87.7	87.8	85.4	82.1	73.5	842	D	4-1/2	K31	600	250
	50	3	1.0	" 0.137	231	11343001	—	—	10000	84.8	86.4	86.5	90.5	87.0	77.9	830	C	4-1/2	K32	600	250
	50	3	1.0	" 0.137	216	130900	—	—	10000	85.5	87.7	86.6	84.4	80.0	69.7	890	D	4-1/2	K32	600	250
" 175 460	60	3	1.15	" 0.0773	224	147300	252	171000	10000	88.6	89.0	87.7	82.6	77.3	66.4	1250	G	6	K23	700	250
	50	3	1.0	" 0.0773	271	152100	—	—	10000	87.3	87.7	86.4	87.6	81.9	70.4	1231	E	6	K23	700	275
	50	3	1.0	" 0.0773	253	148400	—	—	10000	88.0	89.0	87.9	81.6	75.3	63.0	1320	F	6	K23	700	275
" 200 460	60	3	1.15	" 0.0773	253	169500	288	197400	10000	88.0	88.9	88.3	84.3	80.0	70.3	1250	E	6	K24	800	275
	50	3	1.0	" 0.0773	306	175100	—	—	10000	86.7	87.6	87.0	89.4	84.8	74.5	1231	D	6	K26	800	325
	50	3	1.0	" 0.0773	286	170700	—	—	10000	87.4	88.9	87.8	83.3	77.9	66.7	1320	E	6	K26	800	325
14" 250 460	60	3	1.15	" 0.0585	309	207700	348	240200	10000	89.8	89.7	88.0	84.4	80.5	71.6	1701	F	6	K27	900	350
	80	3	1.0	" 0.0585	365	210300	—	—	10000	88.7	89.8	89.6	87.5	84.7	77.1	1647	D	6	K29	1000	400
	50	3	1.0	" 0.0585	349	209100	—	—	10000	89.2	89.7	88.7	83.4	78.4	67.9	1799	F	6	K29	1000	400
" 300 460	50	3	1.15	" 0.052	367	250300	426	290500	10000	89.4	90.1	89.3	85.5	83.1	76.0	1701	E	6	K29	1200	500
	80	3	1.0	" 0.052	434	258600	—	—	10000	88.1	88.7	88.0	90.6	88.1	80.5	1675	C	6	K32	1200	500
	80	3	1.0	" 0.052	415	252000	—	—	10000	88.8	90.1	90.0	84.5	80.9	72.0	1799	D	6	K32	1200	500



RESOLUTION NO. 2008-173

A RESOLUTION OF THE LODI CITY COUNCIL  
AUTHORIZING PURCHASE OF NEW PUMP AND  
MOTOR FOR CITY WATER WELL NO. 18

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WHEREAS, Lodi Municipal Code Section 3.20.070 authorizes dispensing with bids for purchases of supplies, services, or equipment when it is in the best interest of the City to do so; and

WHEREAS, the submersible 150 HP motor at City Water Well No. 18 failed on February 14, 2008, and this was the second time this same motor has failed after being rebuilt. The company that rebuilt the motor for Layne Christensen has not stood behind the work, blaming the City's electrical system or control panels for the motor's continued failure; and

WHEREAS, Layne Christensen has worked closely with the City to ensure that the City's electrical system and control panels are working properly; therefore, Layne Christensen is backing the work and has made a generous offer to pay half the cost of a new pump and motor plus installation; and

WHEREAS, staff recommends replacing the pump and motor at City Water Well No. 18 rather than attempting to repair the existing motor a third time; and

WHEREAS, the cost of a new pump and motor at City Water Well No. 18 would be \$22,142. There is also an additional cost of \$5,000 for adding a column to position the pump and motor to a lower depth (to extend the life of the well) and for splicing in the new cable to the City's electrical control panel, for a total cost of \$27,142; and

WHEREAS, the pump and motor for Well 18 is covered under the City's insurance for major equipment through the California Joint Powers Risk Management Authority, and the City has already received an insurance settlement in the amount of \$36,193.01.

NOW, THEREFORE, BE IT RESOLVED that the Lodi City Council does hereby adopt a resolution authorizing the purchase of a new pump and motor for City Water Well No. 18 from Layne Christensen, of Woodland, California, in the amount of \$27,142.

Dated: September 3, 2008

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I hereby certify that Resolution No. 2008-173 was passed and adopted by the City Council of the City of Lodi in a regular meeting held September 3, 2008, by the following vote:

AYES: COUNCIL MEMBERS – Hansen, Hitchcock, Johnson, Katzakian, and  
Mayor Mounce

NOES: COUNCIL MEMBERS – None

ABSENT: COUNCIL MEMBERS – None

ABSTAIN: COUNCIL MEMBERS – None

  
RANDI JOHL  
City Clerk